Firearms/Toolmarks Discipline
FBI Approved Standards for Scientific Testimony and Report Language

1 Purpose

This document provides examples of the scientifically-supported conclusions and opinions approved for reporting examination results and conveying expert opinion statements during testimony by qualified Examiners within the Firearms/Toolmarks Discipline (FTD). It should be noted that these examples are not intended to be all-inclusive and may be dependent upon a precedent set by the judge or locality in which a testimony is provided. Further, these standards are not intended to serve as requirements for other forensic laboratories and do not imply that statements by other forensic laboratories are incorrect, indefensible, or erroneous.

2 Scope

These standards apply to qualified Examiners within the FTD who conduct examinations, issue *FBI Laboratory Reports*, and provide court testimony.

3 Responsibilities

3.1 The Examiner will ensure the *Laboratory Report* is consistent with the approved standards outlined in this document.

3.2 The Examiner will ensure any FTD testimony is consistent with the approved standards outlined in this document.

3.3 The Examiner will review this document prior to any FTD testimony. A record of this review will be recorded in the Testimony Tracker, under the comments section.

Example: FBI FTD ASSTR reviewed on 00/00/00, (initials)

3.4 The Unit Chief or Technical Leader will ensure the *Laboratory Report* is in accordance with the approved standards outlined in this document.

3.5 The Unit Chief or Technical Leader will monitor and ensure FTD testimony is in accordance with the approved standards outlined in this document.

4 Statements Approved for FBI FTD Pattern and Fracture Examinations, Laboratory Reports, and/or Testimony.

4.1 Conclusions Regarding Forensic Pattern Examination of Firearms/Toolmarks Evidence

4.1.1 Source Exclusion (i.e., Excluded, Elimination)

'Source Exclusion' is an examiner's conclusion that two toolmarks did not originate from the same source.

An Examiner may state or imply the examination result as a *source exclusion* when the observed class characteristics provide extremely strong support for the proposition that the two toolmarks came from different sources and extremely weak or no support for the proposition that the two toolmarks came from the same source. [1] A source exclusion is reached when there is a discernible or measurable difference in class characteristics.

4.1.2 Source Identification (i.e., Identified)

'Source Identification' is an examiner's conclusion that two toolmarks originated from the same source.

An Examiner may state or imply the examination result as a *source identification* when the observed class characteristics and corresponding individual characteristics provide extremely strong support for the proposition that the two toolmarks originated from the same source and extremely weak support for the proposition that the two toolmarks originated from different sources. A source identification is reached when the comparison of the microscopic marks are in sufficient agreement.

Sufficient agreement is related to the significant duplication of random toolmarks as evidenced by the correspondence of a pattern or combination of patterns of surface contours. Agreement is significant when the agreement in the microscopic marks exceeds the best agreement demonstrated between toolmarks known to have been produced by different tools and consistent with agreement demonstrated by toolmarks known to have been produced by the same tool.

A *source identification* is the statement of an Examiner's opinion (an inductive inference[2]) that

[1] The Department of Justice Uniform Language for Testimony and Reports for the Forensic Firearms/Toolmarks Discipline – Pattern Examination allows for a source exclusion to be based upon differences in individual characteristics. A source exclusion based upon differences in individual characteristics is not approved by the FBI Laboratory Firearms/Toolmarks Discipline. This determination is based on the observations that indicate individual characteristics may not be permanent.

[2] Inductive reasoning (inferential reasoning):
A mode or process of thinking that is part of the scientific method and complements deductive reasoning

the probability that the two toolmarks were made by different sources is so small that it is negligible.

4.1.3 Inconclusive (i.e., No Conclusion)

An Examiner may state or imply the examination result as an *inconclusive* when there is an insufficient quality and/or quantity of corresponding individual characteristics to identify or exclude. Reasons for an *inconclusive* conclusion include the presence of microscopic similarity that is insufficient to form the conclusion of source identification; a lack of any observed microscopic similarity; or microscopic dissimilarity that is insufficient to form the conclusion of source exclusion.[1] An *inconclusive* conclusion indicates that the microscopic marks in question may or may not have originated from the same or known source.

4.2 Conclusions Regarding Examination of Fractured Items Conducted in the Forensic Firearms/Toolmarks Discipline

4.2.1 Exclusion

'Exclusion' is an Examiner's conclusion that two or more fractured items do not physically fit together.

An Examiner may state or imply the examination result as an *exclusion* when the observed class characteristics and/or corresponding individual characteristics of the two or more fractured items provide extremely strong support for the proposition that the fractured items do not physically fit together and extremely weak or no support for the proposition that the fractured items physically fit together. When an exclusion decision is reached between fractured items from the same object, it is based on a one-to-one comparison of those fractured items.

4.2.2 Fracture Fit (i.e., fracture match)

'Fracture fit' is an Examiner's conclusion that two or more fractured items were once part of the same object.

An Examiner may state or imply the examination result as a *fracture fit* when the observed class characteristics and corresponding individual characteristics of the two or more fractured items provide extremely strong support for the proposition that they were once part of the same object and extremely weak support for the proposition that the fractured items originated from different objects. This conclusion can only be reached when two or more fractured items physically fit together or when a comparison of the corresponding surfaces of the fractured items reveals a fit.

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and logic. Inductive reasoning starts with a large body of evidence or data obtained by experiment or observation and extrapolates it to new situations. By the process of induction or inference, predictions about new situations are inferred or induced from the existing body of knowledge. In other words, and inference is a generalization, but one that is made in a logical and scientifically defensible manner. OXFORD DICTIONARY OF FORENSIC SCIENCE 130 (Oxford Univ. Press 2012).

A fracture fit conclusion is the statement of an Examiner's opinion (an inductive inference[2]) that the probability that two or more fractured items were not part of the same object is so small that it is negligible.

4.2.3 Inconclusive (i.e., No Conclusion)

An Examiner may state or imply the examination result as an *inconclusive* when there is an insufficient quantity and/or quality of observed characteristics to determine whether two or more fractured items could have originated from the same object. Reasons for an *inconclusive* conclusion include the presence of physical or microscopic similarity that is insufficient to form the conclusion of fracture fit; or a lack of any observed similarity. An *inconclusive* conclusion indicates that no determination can be reached as to whether two or more fractured items could have originated from the same object.

5 Statements Not Approved For FBI FTD Pattern and Fracture Examinations, Laboratory Reports and/or Testimony

5.1 Absolute Certainty

A conclusion provided in a report or during testimony is ultimately an Examiner's decision and is not based on a statistically-derived or verified measurement or comparison to all other firearms, toolmarks, or fractured items. Therefore an Examiner will not:

- assert that a 'source identification' or a 'source exclusion' conclusion is based on the 'uniqueness'[3] of an item of evidence.
- use the terms 'individualize' or 'individualization' when describing a source conclusion.
- assert that two toolmarks originated from the same source to the exclusion of all other sources.
- use the statement 'to the exclusion of all other tools in the world.'
- assert that two toolmarks originated from the same source with absolute certainty.
- assert that a 'fracture fit' or 'exclusion' conclusion is based on the 'uniqueness'[3] of an item of evidence.
- use the terms 'individualize' or 'individualization' when describing a 'fracture fit' or 'exclusion' conclusion.
- assert that two or more fractured items originated from the same source to the exclusion of all other sources.
- assert that two or more fractured items originated from the same source with absolute certainty.

[3] As used in this document, the term 'uniqueness' means having the quality of being the only one of its kind. OXFORD ENGLISH DICTIONARY 804 (Oxford Univ. Press 2012).

- assert that two or more fractured items were once part of the same object unless they physically fit together or when a microscopic comparison of the corresponding surfaces of the fractured items reveals a fit.

5.2 Numerical Certainty

An Examiner will not assert that examinations conducted in the forensic firearms/toolmarks discipline are infallible or have a zero error rate.

An Examiner will not provide a conclusion that includes a statistic or numerical degree of probability except when based on relevant and appropriate data.

An Examiner will not assert that two toolmarks originated from the same source with 100% certainty.

An Examiner will not assert that two or more fractured items originated from the same source with 100% certainty.

5.3 Measure of Accuracy

An Examiner will not cite the number of examinations conducted in the forensic firearms/toolmarks discipline performed in his or her career as a direct measure for the accuracy of a conclusion provided. An Examiner may cite the number of examinations conducted in the forensic firearms/toolmarks discipline performed in his or her career for the purpose of establishing, defending, or describing his or her qualifications or experience.

An Examiner will not use the expressions ‘reasonable degree of scientific certainty,’ ‘reasonable scientific certainty,’ or similar assertions of reasonable certainty in either reports or testimony unless required to do so by a judge or applicable law.[4]

6 Laboratory Report Reviews

Laboratory Reports will be reviewed following the *FTD Procedure for Case Assignment, Records, Results and Verifications* and *FTD Procedure for Report Writing and Review* to ensure compliance with the approved statements in this document.

[4] *See Memorandum from the Attorney General to Heads of Department Components* (Sept. 9. 2016), https://www.justice.gov/opa/file/891366/download.

7 Testimony Reviews

Testimony records will be reviewed following the *FBI Laboratory Practices for Testimony Related Activities*. The review will ensure compliance with the approved statements in this document.

8 References

FBI Laboratory Quality Assurance Manual

FBI Laboratory Operations Manual

United States. Department of Justice. Office of Legal Policy. Forensic Science. (2020, August) *United States Department of Justice Uniform Language for Testimony and Reports for the Forensic Firearms/Toolmarks Discipline – Fracture Examination*. Retrieved from the Department of Justice Web site: https://www.justice.gov/olp/page/file/1284761/download

United States. Department of Justice. Office of Legal Policy. Forensic Science. (2020, August) *United States Department of Justice Uniform Language for Testimony and Reports for the Forensic Firearms/Toolmarks Discipline – Pattern Examination*. Retrieved from the Department of Justice Web site: https://www.justice.gov/olp/page/file/1284766/download

Rev. #	Issue Date	History
2	02/13/19	Sections 4 and 5 were updated to reflect the issuance of the DOJ ULTR for Pattern Match and Fracture Match Examinations. The conclusion were expanded in Section 4. Measurement of accuracy was added to Section 5. The LOM title was updated in Section 7 and the ULTR was added to Section 8.
3	08/17/20	Sections 2, 4.2.1: grammatical corrections. Sections 4 and 5 were updated to reflect August 2020 revisions of the *Department of Justice Uniform Language for Testimony and Reports for the Forensic Firearms/Toolmarks Discipline – Fracture Examination*, and *Department of Justice Uniform Language for Testimony and Reports for the Forensic Firearms/Toolmarks Discipline – Pattern Examination*. Section 6 updated to reflect current titles of referenced FTD documents. Section 8 was updated to remove reference to ASCLD-Lab International Supplement document, to simplify references to FBI QAM and LOM, and to update to August 2020 DOJ ULTR references. Edited titles of Sections 4 and 5 and first paragraph of Section 5.1 to 'examinations, laboratory reports, and/or testimony' for order.
4	09/22/20	Sections 3.4 and 3.5: grammatical corrections. Section 5.1 heading numbering correction.

Approval Redacted - Signatures on File

Firearms/Toolmarks
Technical Leader Date: 09/22/2020

Firearms/Toolmarks
Unit Chief (Acting) Date: 09/22/2020

Scientific and Biometric
Analysis Unit Chief Date: 09/22/2020

QA Approval

Quality Manager Date: 09/22/2020